What is claimed is:

- 1. A system, comprising:
 - a spatially distributed multimode optical fiber;
 - a photodetector configured to detect optical signals provided from said fiber;
- a wireless digital module coupled to said photodetector and adapted to wirelessly transmit a wireless signal encoding a plurality of detected variables of the optical signals;
 - a wireless receiver adapted to receive the wireless signal; and
- a signal processing module coupled to said wireless receiver and adapted to decode and interpret the plurality of detected variables of the optical signals.
- 2. The system of claim 1, further comprising a coherent optical source optically couplable to said optical fiber.
- 3. The system of claim 1, further comprising a laser diode optically couplable to said optical fiber.
- 4. The system of claim 1, further comprising a laser light pointer optically couplable to said fiber.
- 5. The system of claim 1, further comprising an electronic driver adapted to control light provided to said fiber.
- 6. The system of claim 1, wherein said fiber is integrating.
- 7. The system of claim 1, wherein said fiber is spatially distributed with respect to a patient bed for optimized detection of patient movement.
- 8. The system of claim 1, wherein said fiber is spatially distributed with respect to a patient bed for optimized detection of patient respiration.
- 9. The system of claim 1, wherein said fiber is spatially distributed with respect to a patient bed for optimized detection of patient heart rate.

- 10. The system of claim 1, wherein said fiber is spatially distributed with respect to a patient bed for optimized detection of any combination of patient movement, respiration rate, and heart rate.
- 11. The system of claim 1, wherein said fiber converts higher order modes to lower order modes.
- 12. The system of claim 1, wherein said fiber converts lower order modes to higher order modes.
- 13. The system of claim 1, wherein the optical signals comprise a speckle pattern.
- 14. The system of claim 1, wherein the optical signals comprise a plurality of high order excitation modes.
- 15. The system of claim 1, wherein the optical signals comprise a plurality of high order excitation modes that are proportional to a perturbation along said fiber.
- 16. The system of claim 1, wherein said photodetector is optically couplable to said optical fiber.
- 17. The system of claim 1, wherein said photodetector provides an output proportional an integrated perturbation along said fiber.
- 18. The system of claim 1, wherein said photodetector comprises a photodetector array.
- 19. The system of claim 1, wherein said photodetector comprises a digital photodetector.
- The system of claim 1, wherein said photodetector comprises a digital photodetector array.
- 21. The system of claim 1, wherein said photodetector comprises a CCD camera.

- 22. The system of claim 1, wherein said photodetector comprises a CMOS camera.
- 23. The system of claim 1, wherein the wireless signal encodes a plurality of digitized images of the optical signals.
- 24. The system of claim 1, further comprising a high order mode transmission element optically couplable to said optical fiber.
- 25. The system of claim 1, further comprising a filter configured to pass only lower order modes converted from higher order modes.
- 26. The system of claim 1, further comprising a filter configured to pass only higher order modes converted from lower order modes.
- 27. The system of claim 1, further comprising a matched spatial filter.
- 28. The system of claim 1, further comprising a matched spatial filter adapted to spatially filter light provided to said fiber.
- 29. The system of claim 1, further comprising a matched spatial filter adapted to filter the optical signals.
- 30. The system of claim 1, further comprising a matched spatial filter adapted to spatially filter the plurality of detected variables of the optical signals.
- 31. The system of claim 1, further comprising a matched spatial filter adapted to filter a plurality of digitized images provided by said photodetector.
- 32. The system of claim 1, wherein said signal processing module is adapted to decode a plurality of digitized images and to interpret one or more variables of the plurality of digitized images.

- 33. The system of claim 1, wherein said signal processing module provides an output proportional to an absolute value of $\Delta P/\Delta t$, where P is an integrated perturbation along said fiber and t is time.
- 34. The system of claim 1, wherein said signal processing module is adapted to provide matched spatial filtering of a plurality of digitized images to optimize a signal-to-noise ratio.
- 35. The system of claim 1, wherein said signal processing module is adapted to process a predetermined portion of the optical signals.
- 36. The system of claim 1, wherein said signal processing module is adapted to process a portion of the optical signals, the portion associated with a human vital sign.
- 37. The system of claim 1, wherein said signal processing module is adapted to interpret a frequency of a perturbation of the fiber.
- 38. The system of claim 1, wherein said signal processing module is adapted to interpret a frequency of a perturbation of the plurality of detected variables.
- 39. The system of claim 1, wherein said signal processing module is adapted to interpret fluctuations in a speckle pattern of the optical signals.
- 40. The system of claim 1, wherein said signal processing module is adapted to interpret a conversion of excitation modes of the optical signals in a spatially filtered region.
- 41. The system of claim 1, wherein said signal processing module is adapted to interpret an incidence of lower order excitation modes of the optical signals in a predetermined spatial region.
- 42. The system of claim 1, wherein said signal processing module is adapted to interpret an incidence of high order excitation modes of the optical signals in a predetermined spatial region.

- 43. The system of claim 1, wherein said signal processing module is adapted to interpret a frequency of a perturbation of the plurality of detected variables, the frequency corresponding to a patient vital sign.
- 44. The system of claim 1, wherein said signal processing module is adapted to interpret a frequency of a perturbation of the plurality of detected variables, the frequency corresponding to a patient movement.
- 45. The system of claim 1, wherein said signal processing module is adapted to interpret a change in an optical power of the plurality of detected variables.
- 46. The system of claim 1, wherein said signal processing module is adapted to interpret a change in angle of an excitation mode of the optical signals.
- 47. The system of claim 1, wherein said signal processing module is adapted to interpret a change in excitation modes of the optical signals.
- 48. The system of claim 1, wherein said signal processing module is adapted to monitor the plurality of detected variables of the for a change in a patient's vital sign.
- 49. The system of claim 1, wherein said signal processing module is adapted to monitor the plurality of detected variables for a change in a patient's movement.
- 50. The system of claim 1, wherein said signal processing module is adapted to automatically monitor the plurality of detected variables for a change in patient movement, respiration rate, or pulse rate.
- 51. The system of claim 1, further comprising:a human support structure supporting said fiber.
- 52. The system of claim 1, further comprising: a human support structure adjacent said fiber.

- 53. The system of claim 1, further comprising: a mattress adjacent said fiber.
- 54. The system of claim 1, further comprising: a pad adjacent said fiber.
- 55. The system of claim 1, further comprising: a carpet adjacent said fiber.
- 56. The system of claim 1, wherein said system comprises an STM sensor.
- 57. The system of claim 1, wherein said system comprises a HOME sensor.

58. A method, comprising:

transmitting from a wireless digital photodetector coupled to an fiber optic sensor a signal encoding a plurality of detected variables of optical signals emerging from the fiber optic sensor;

receiving the signal at a wireless receiver;

decoding the signal at a signal processing module coupled to a wireless receiver; and

interpreting the plurality of detected variables of the decoded signal.

59. A method, comprising:

variables of the optical signals.

spatially distributing a multimode optical fiber in a predetermined pattern for facilitating sensing of a predetermined type of perturbation;

transmitting optical signals from the spatially distributed integrating multimode optical fiber;

detecting the optical signals at a photodetector; and wirelessly transmitting a wireless signal encoding a plurality of detected

60. The method of claim 59, further comprising:

receiving the wireless signal at a wireless receiver.

- 61. The method of claim 59, further comprising: decoding the wireless signal.
- 62. The method of claim 59, further comprising:

 decoding the wireless signal at a signal processing module coupled to a wireless receiver.
- 63. The method of claim 59, further comprising: decrypting the wireless signal.
- 64. The method of claim 59, further comprising: frequency despreading the wireless signal.
- 65. The method of claim 59, further comprising: demodulating the wireless signal.
- 66. The method of claim 59, further comprising: sampling the wireless signal.
- 67. The method of claim 59, further comprising: digitizing the wireless signal.
- 68. The method of claim 59, further comprising: detecting the wireless signal.
- 69. The method of claim 59, further comprising: demultiplexing the wireless signal.
- 70. The method of claim 59, further comprising: spatially filtering the optical signals.
- 71. The method of claim 59, further comprising: spatially filtering the wireless signal.

- 72. The method of claim 59, further comprising: spatially filtering the detected variables.
- 73. The method of claim 59, further comprising: Fourier transforming the wireless signal.
- 74. The method of claim 59, further comprising: interpreting the wireless signal.
- 75. The method of claim 59, further comprising: interpreting the plurality of detected variables.
- 76. The method of claim 59, further comprising: monitoring the wireless signal.
- 77. The method of claim 59, further comprising: monitoring the plurality of detected variables.
- 78. The method of claim 59, further comprising:
 providing notification of a predetermined change in the wireless signal.
- 79. The method of claim 59, further comprising: providing notification of a predetermined change in the plurality of detected variables.
- 80. A machine-readable medium comprising instructions for activities comprising:

 decoding a wireless signal obtained from a wireless digital photodetector

 coupled to an optical fiber spatial distributed in a predetermined pattern for facilitating

 sensing of a predetermined type of perturbation, the wireless signal encoding a plurality

 of detected variables of optical signals emerging from the spatially distributed fiber

 optic sensor; and

interpreting the plurality of detected variables of the decoded signal.